



Photo credit: NOAA.

KEY INFORMATION

Areas of Concern

Western Atlantic - Gulf of Saint Lawrence to North Carolina.

Year Identified as "Species of Concern"
1999

Factors for Decline

- Bycatch
- Commercial fishing

Conservation Designations

IUCN: Endangered
American Fisheries Society: Vulnerable

Brief Species Description:

Barndoor skate is the largest skate in the northwest Atlantic. It occurs along the coast of the northeast United States from southwestern Grand Bank and southern Gulf of St. Lawrence south to northeast Florida and to the banks of Newfoundland. It is most commonly found in the Gulf of Maine and in Southern New England. Skates are known to migrate seasonally, responding to temperature. In the summer and autumn, they swim offshore and in the winter and spring, they move closer to shore.

The barndoor skate is characterized by a broad disk with sharply angled corners, front edges that are concave and a pointed snout; there are no mid-dorsal spines on the disk. The tail has three rows of spines: one mid-dorsal row and one row on each side. Dorsal fins are close together; space between fins is decidedly shorter than the base of the first dorsal fin. The upper surface is brown with scattered small dark spots and the lower surface is white blotched irregularly grey. The barndoor skate is slow growing and long-lived. Maximum size is 5 feet (1.5 m) and 40 pounds (18 kg). Sexual maturity is reached at approximately 7 years (Gedamke et al. 2005) or when male clasper length is about 39 inches (1 m). Females lay heavily armored eggs, which appear as oblong capsules with stiff pointed horns at the corners, in sandy or muddy flats. More than 1 egg can be in each egg case. Hatching occurs after about 9 months. The barndoor skate prefers water depths of 33 to 460 feet (10-140m) with a temperature ranging from just above freezing to 68°F (20°C). Bigelow and Schroeder (1953) found that skates will reach depths of up to 1300 feet (400 m). The barndoor skate forages on lobsters, crabs, shrimp, isopods, crustaceans, bivalves, gastropods, squids, worms, and fishes over sand, gravel or mud substrates. The barndoor skate has very few predators because of its large size; large sharks are its only likely predator. Many parasites occur on them.

Rationale for "Species of Concern" Listing:

Demographic and Genetic Diversity Concerns:

The barndoor skate was abundant in the 1950s-1960s, but its numbers severely declined in the 1970s to the early 1990s (Casey and Myers 1998) with increases since the late 1990s (Packer et al. 2003). NMFS fishery-independent surveys show the same pattern. Due to slow growth, late maturity, and



Species of Concern

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few offspring, barndoor skate are susceptible to [overfishing](#). The 1996-1998 Northeast Fishery Science Center autumn survey biomass index average was 0.08 kg/tow, increasing to 1.17 kg/tow for the 2004-2006 period. These averages are below the proposed Sustainable Fisheries Act biomass target of 1.62 kg/tow but above the [overfished](#) threshold of 0.81 kg/tow.

Factors for Decline:

Skates are often captured in commercial trawl nets such as otter and groundfish trawls and scallop dredges. The recent introduction of a directed fishery for dogfish and skate on Georges Bank has resulted in a decline of this species. Its flesh is used for products such as bait, fish meal, pet food, and the meat from its wings is sold as seafood.

Status Reviews/Research Underway:

NMFS conducted a status review after it was petitioned to list this species under the ESA, concluding in 2002 that listing was not warranted (67 FR 61055). However, NMFS retained the species on the [candidate species](#) list because of remaining concerns and uncertainties. Now this species is considered to be a species of concern (rather than a candidate species).

Data Deficiencies:

Life history, stock structure, and fishery independent data are needed.

Existing Protections and Conservation Actions:

There is a ban on possession in the US EEZ portion of the skate fishery management unit.

References:

Bigelow, H.B., and W.C. Schroeder. 1953. Fishers of the western North Atlantic. Mem. Sears Found. Mar. Res. Vol. 2.

Casey, J.M. and R.A. Myers. 1998. Near extinction of a large, widely distributed fish. Science 281:690-692.

Gedamke, T., W.D. DuPaul, and J.A. Musick. 2005. Observations on the life history of the barndoor skate, *Dipturus laevis*, on Georges Bank (Western North Atlantic). J NW Atl Fish Sci 35:67-78.

Packer, D.B., C.A. Zetlin, and J.J. Vitaliano. 2003. Essential fish habitat source document: barndoor skate. NOAA Technical Memorandum NMFS-NE-173, Woods Hole, MA.
<http://www.nefsc.noaa.gov/nefsc/publications/tm/tm173/tm173.pdf>

Point(s) of contact for questions or further information:

For further information on this Species of Concern, or on the Species of Concern Program in general, please contact NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, soc.list@noaa.gov; <http://www.nmfs.noaa.gov/pr/species/concern/>, or Kimberly Damon-Randall, NMFS, Northeast Region, One Blackburn Drive, Gloucester, MA 01930-2295, (978) 281-9328, x6535, Kimberly.Damon-Randall@noaa.gov.